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IN THE

Supreme Court of the United States

OIL STATES ENERGY SERVICES, LLC,

Petitioner,

v.

GREENE'S ENERGY GROUP, LLC,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF UNIVERSITY OF NEW MEXICO AS *AMICUS CURIAE* IN SUPPORT OF PETITIONER

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CASES

Carnegie-Mellon Univ. v. Marvell Tech. Group,
807 F.3d 1283 (Fed. Cir. 2015) 19

In re Yamamoto,
740 F.2d 1569 (Fed. Cir. 1984) 22

Markman v. Westview Instruments, Inc.,
517 U.S. 370 (1996) 23

Microsoft Corp. v. i4i Ltd. P'ship,
131 S. Ct. 2238 (2011) 23

Newsham v. Grey,
C33/376, f. 336 (Ch. 1740) 23

Phillips v. AWH Corp.,
415 F.3d 1303 (Fed. Cir. 2005) 22

Yissum Research Dev. Co. of the Hebrew Univ. of Jerusalem v. Sony Corp.,
626 F. App'x 1006 (Fed. Cir. 2015) 7

STATUTES AND OTHER AUTHORITIES

7 U.S.C. § 301 9

35 U.S.C. § 6 25

Cited Authorities

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35 U.S.C. § 200 2

35 U.S.C. §§ 200-212 ..... 2, 22

35 U.S.C. § 282 4

35 U.S.C. § 311 ..... 21, 24

35 U.S.C. § 316 23

37 C.F.R. § 42.100 22

37 C.F.R. § 42.101 24

37 C.F.R. § 42.108 22

152 Cong. Rec. H8814, § 201 13

H.R. REP. NO. 112-98 22

Judiciary Act of 1789, 1 Stat. 73 23

Academia Continues as Nation's Basic Research Hub, R&D 2017 Global R&D Funding Forecast (Winter 2017) 1, 14

Anahad O'Connor, *Ivan Getting, 91, a Develper of Global Positioning System*, N.Y. TIMES, Oct. 21, 2003 2

Cited Authorities

Page

Ashley J. Stevens, *The Enactment of Bayh-Dole*, J. OF TECH. TRANSFER, 29 at 94 (2004) 12, 13

Association of Univ. Tech. Managers, *40 Innovations Worth Celebrating* 8-9

Association of University Technology Managers, *Highlights of AUTM's U.S. Licensing Activity Survey, FY2015*.....1, 3

Baker, P, *et al.*, *The Positive Impact of Academic Innovations on Quality of Life*, The Better World Report, 2010 3

Bill Vobach, *Selection Process for Assigning Judges to Expanded PTAB Panels*, 717 Madison Place Blog (Aug. 20, 2017)..... 7, 21-22

Committee on Research Universities, *Research Universities and the Future of America*, (Washington, D.C.: The National Academies Press, 2012).....9

Congress of the United States, *Congressional Budget Office*, "Federal Support for Research and Development," June 2007.....11, 15

Consortium for Science, *Science the Endless Frontier: Learning from the Past, Designing for the Future*, POL'Y & OUTCOMES, Dec. 9, 1994.....11

Cited Authorities

Page

David Kroll, *The Influential Patent That's Driving Anti-Aging Research*, Reuters, Sept. 15, 2015 8

Don Clark, "Marvell to Pay $750 Million in Settlement with Carnegie Mellon," WALL ST. JOURNAL, Feb. 17, 2016 19

Ellie Bothwell, *Top 10 Universities for Producing Nobel Prizewinners*, TIMES HIGHER EDUC. (October 17, 2016) 5

Gaius Chamberlain, *Patricia Bath*, The Black Inventor Online Museum (Nov. 26, 2012) 2

Gary P. Pisano & Willy C. Shih, *Restoring American Competitiveness*, HARV. BUS. REV. (July 2009) 17

Gene Quinn, "Post Grant Patent Challenges Concern Universities, Pharma," IPWatchdog.com, April 1, 2015 25

Gene Quinn, *Exclusive Interview: Senator Birch Bayh on Bayh-Dole*, IPWatchdog.com (November 7, 2010) 13-14

Highlights of AUTM's U.S. Licensing Activity Survey, FY2015 ..... 16, 17

Cited Authorities

Page

Innovation's Golden Goose, The Economist, December 12, 2002. . . . . .3, 13

Irene Abrams, Grace Leung, Ashley J. Stevens, *How are U.S. Technology Transfer Offices Tasked and Motivated—Is It All About the Money?* 17 RES, MGMT. REV. 35 (2009). 20

Jacob H. Rooksby, *Innovation and Litigation: Tensions Between Universities and Patents and How to Fix Them*, 15 YALE J. OF LAW AND TECH. (2013) 8, 20

Joan Farre-Mensa, Deepak Hegde, Alexander Ljungqvist, *The Bright Side of Patents*, Office of the Chief Economist, USPTO WORKING PAPER SERIES, Working Paper 2015-5 (Jan. 2016) 18

Joe Nocera, *The Patent Troll Smokescreen*, N.Y. TIMES, Oct. 23, 2015. . . . . .16, 20

Jonathan R. Cole, *The Great American University: Its Rise to Preeminence, Its Indispensable National Role; Why it Must be Protected,"* (New York: Public Affairs, 2009) 9, 10, 12

Jonathan Rothwell, *et al.*, *Patenting Prosperity: Invention and Economic Performance in the United States and its Metropolitan Areas*, Brookings Institution, 2013 . . . . . 11-12, 21

Cited Authorities

Page

Joshua E. Powers, *Commercializing Academic Research: Resource Effects on Performance of University Technology Transfer*, 74 J. Higher Educ. 26, 45 (2003) 9

Larry Gordon, *How the UC System is Making Patents Pay Off*, L.A. Times, Oct. 10, 2015.....17

Mark Shwartz, *GPS Inventor Inducted Into Hall Of Fame*, Stanford Report, February 18, 2004 8

Mark Shwartz, *GPS Pioneer Bradford Parkinson Awarded Draper Prize In Engineering*, Stanford Report, February 19, 2003.....8

May 19, 2009 Letter from Carl E. Gulbrandsen, Wisconsin Alumni Research Foundation to The Hon. Jon Leibowitz, Chairman, Fed. Trade Comm'n, RE: Evolving IP Marketplace – Comment, Project No. P093900 18

Michelle Carniaux and Michael Sander, *PTAB Crashers: a Who's Who of Non-Practicing IPR Petitioners*, Inter Partes Review Blog.....24

MIT 150: The Top 50, Boston Globe.....2

MRI's Inside Story, The Economist, December 4, 2003.....8

Cited Authorities

Page

National Sci. Board, *Science & Engineering Indicators 2016*, Nat'l Sci. Found. 14

Paul Offit, *the Cutter Incident, 50 Years Later*, 352 N. Engl. J. Med. 1411-12 (April 7, 2005) 2

Peter Lee, *Patents and the University*, 63 Duke L. J. 1, 9-10 (2013) 9

Rebecca M. Blank, *What Drives American Competitiveness?* 663 Annals Am. Acad. Pol. & Soc. Sci. 8 (2016) 12, 14

Rob Stern & Gene Quinn, *PTAB Death Squads: Are All Commercially Viable Patents Invalid?* IPWatchdog.com (March 24, 2014) 24

Robert Sanders, "Nobel Laureate and laser inventor Charles Townes dies at 99," *UC-Berkeley News Center*, January 27, 2015 8

Scott Andrew Shane, *Academic Entrepreneurship: University Spinoffs and Wealth Creation*," (Northampton, MA: Edward Elgar Publishing Ltd., 2009) 19

The Bayh-Dole Act: Important to our Past, Vital to our Future, Association of Technology Managers, March 14, 2007 14

Cited Authorities

Page

Tim Stoddard, *Blue Light Technology Remains BU's Intellectual Property*, B.U. Bridge (Dec. 13, 2002) 8

U.S. Patent and Trademark Office Patent Technology And Marketing Team, *Total R&D Expenditures At U.S. Colleges And Universities: Top 250 Institutions In R&D Expenditures* 1

United States Patent and Trademark Office, *Patent Trial and Appeal Board Statistics 3/31/2017 in Fiscal Year 2011* 1, 25

University of Iowa Operations Manual, § 30.2.....17

University of Virginia Licensing & Ventures Group, *New Ventures*.....17

Vannevar Bush, *Science: The Endless Frontier, A Report to the President*, July 1945 10

Walter W. Powell & Jason Owen-Smith, *Universities and the Market for Intellectual Property in the Life Sciences*, 17 J. Pol'y Analysis & Mgmt. 253, 254 (1998) 9

WARF.org, *Investing in Research, Making a Difference* 16

World Intell. Prop. Org., *Record Year for International Patent Applications in 2016; Strong Demand Also for Trademark and Industrial Design Protection* (March 15, 2017) 3

STATEMENT OF INTEREST[1]

Amicus curiae, the University of New Mexico ("UNM"), is a major United States research university and the flagship school of its state university system. Universities perform nearly 60% of basic research in the United States. *Academia Continues as Nation's Basic Research Hub*, R&D 2017 Global R&D Funding Forecast (Winter 2017) at 12-13. In fiscal year 2015, United States universities performed $66,500,000,000 worth of funded research and filed nearly 16,000 new patent applications. Association of University Technology Managers, *Highlights of AUTM's U.S. Licensing Activity Survey, FY2015*, at 4. In fiscal year 2011, research and development expenditures for the top 250 universities combined for more than $62 billion. U.S. Patent and Trademark Office Patent Technology And Marketing Team, *Total R&D Expenditures At U.S. Colleges And Universities: Top 250 Institutions In R&D Expenditures In Fiscal Year 2011, available at* http://www.uspto.gov/web/offices/ac/ido/oeip/taf/univ/r_and_d/r_d_nsf_2012.htm. From 1969-2012, the PTO[2] granted 75,353 patents to universities in the United States. *Ibid.*

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1. This brief is filed with the written consent of all parties through a letter of consent by both petitioner and respondent on file with the Clerk and by the accompanying written consent of the Government attached hereto. Prior to respondent's filing a blanket consent to amici curiae, this amicus obtained written consent from respondent's counsel. No counsel for any party authored this brief in whole or in part, and no person or entity other than amicus curiae, its members, or its counsel made a monetary contribution intended to fund its preparation or submission.

2. United States Patent and Trademark Office.

University research has developed new technologies, medicines, and products used in Americans' daily lives. Such innovations include radar and global positioning systems,[3] the polio vaccine,[4] laser eye surgery,[5] and the Human Genome Project.[6]

In 1980, Congress passed the Bayh-Dole Act, 35 U.S.C. §§ 200-212. Its purposes included "us[ing] the patent system to promote the utilization of inventions arising from federally supported research or development," concurrently "promot[ing] collaboration between commercial concerns and nonprofit organizations, including universities," and "promot[ing] the commercialization and public availability of inventions made in the United States by United States industry and labor." 35 U.S.C. § 200.

The Bayh-Dole Act enacted incentives for universities to support inventorship, obtain patents, and license those patents for marketing and commercialization by private companies. *The Economist* described Bayh-Dole as "[p]ossibly the most inspired piece of legislation to be

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3. Anahad O'Connor, *Ivan Getting, 91, a Developer of Global Positioning System*, N.Y. TIMES, Oct. 21, 2003, *available at*: http://www.nytimes.com/2003/10/21/us/ivan-getting-91-a-developer-of-global-positioning-system.html?mcubz=0

4. Paul Offit, *the Cutter Incident, 50 Years Later*, 352 N. ENGL. J. MED. 1411-12 (April 7, 2005).

5. Gaius Chamberlain, *Patricia Bath*, The Black Inventor Online Museum (Nov. 26, 2012), *available at*: http://blackinventor.com/patricia-bath/.

6. *MIT 150: The Top 50*, BOSTON GLOBE, *available at*: http://archive.boston.com/news/education/higher/specials/mit150/galleries/top_50/?pg=50.

enacted in America over the past half-century" because it released enormous technological innovation into the U.S. market and created a virtuous cycle of revenue for further university research and massive economic benefits. *Innovation's Golden Goose*, The Economist, Dec. 12, 2002, *available at* http://www.economist.com/node/1476653. In fiscal year 2015 alone, more than 1,000 startups were formed from university technology transfer and more than 70 percent of the companies formed operate in the state where the original research occurred, which creates jobs for the home state economy. Association of University Technology Managers, *Highlights of AUTM's U.S. Licensing Activity Survey, FY2015*, at 8.

Since 1980, more than 6,000 new U.S. companies have been formed with use of university inventions, 4,350 new university licensed products are in the market, and 5,000 active university-industry licenses are in effect. Baker, P., *et al.*, *The Positive Impact of Academic Innovations on Quality of Life*, The Better World Report, 2010. U.S. universities are also world-leading research institutions—nine of the 12 universities that filed the most patent applications under the Patent Cooperation Treaty in 2016 are U.S. universities. World Intell. Prop. Org., *Record Year for International Patent Applications in 2016; Strong Demand Also for Trademark and Industrial Design Protection* (March 15, 2017), at Annex 3, *available at* www.wipo.int/export/sites/www/pressroom/en/documents/pr_2017_804_annexes.pdf#annex3.

Ultimately, universities are unique among participants in the patent system. They do not manufacture or assemble products, so their detractors frequently characterize universities as "non-practicing" entities and seek to

lump them together with patent trolls. But universities nevertheless practice their inventions—universities create, innovate, invent, investigate, inquire, and thereby expand scientific knowledge. Unlike non-practicing entities that neither develop products nor engage in creating the patented inventions, university innovation means that the universities' researchers performed the work that resulted in the patent. State universities like UNM also attract students to develop and contribute to expanding scientific knowledge in their home states and throughout the world.

The value of university innovation gives UNM a strong interest in ensuring that patent law promotes respect for intellectual property rights. Often it is the universities' ability to protect their innovations through a strong patent system that enables them to generate revenue streams that support additional fundamental research. UNM has no interest in any party to this litigation and no direct stake in the outcome of this case. UNM seeks only to ensure that university patentees retain their constitutional rights to a jury trial and that patent reforms respect the deference due to patents that Congress guaranteed in the Patent Act. 35 U.S.C. § 282 ("A patent shall be presumed valid.").

SUMMARY OF ARGUMENT

The Question Presented upon which this Court granted, in part, the petition that Oil States filed presents a substantial question of constitutional law. The issue affects major research universities because the *inter partes* review ("IPR") procedure has weakened the ability of universities to license technology for fair value.

Infringers and potential infringers view the cost of challenging a patent, and the likelihood of winning such challenge under the lower burden of proof and lack of any presumption of patent validity that inheres in IPRs, as less onerous than paying reasonable royalties. Universities, which are non-profit research institutions with limited funds, are especially harmed by IPRs because they have to litigate in an expensive adversarial process after previously spending significant resources to prosecute the patents they obtained.

Research universities in the United States have a long history of contributing to the total sum of practical knowledge both in the United States and globally. The scientific discoveries and advancements made in university research have developed technology, improved health, saved lives and increased the standard of living. Nine of the top 10 institutions most frequently awarded the Nobel Prize in this century are in the United States. Ellie Bothwell, *Top 10 Universities for Producing Nobel Prizewinners*, TIMES HIGHER EDUC. (October 17, 2016), *available at* https://www.timeshighereducation.com /features/top-10-universities-producing-nobel-prizewinners-2016.

The Bayh-Dole Act has helped universities expand the reach of their research to aid the whole nation. And the ability to license patented research provides an important revenue stream for universities, helps attract researchers, develop nascent industries, expand local job opportunities, and concurrently wards against the problem of free riders. The IPR procedure that has become a substitute for district court litigation, without the protections of district court litigation, harms research universities by devaluing

existing licenses because the underlying patents, which are typically licensed without any prohibition on challenging their validity, can be deemed invalid more easily by PTAB than by a district court. This makes new technology more difficult to license due to the threat of an IPR and impedes development of startup companies formed with university patents because the startups rely on the patents to protect them while they are financially vulnerable to larger competitors.

First, the threat of IPR devalues existing university licenses. Licenses are only as strong as the patents licensed. Licensees who see an opportunity to challenge the patents under the license to avoid future royalties will do so, or threaten to, unless the licenses are renegotiated. A non-profit research university often is forced to either renegotiate or suffer the costs and risks of an IPR that can render the license worthless.

Second, the threat of IPR devalues unlicensed patents. Universities are not primarily litigious and instead seek to license their technology with industry partners. Enforcing patent exclusivity through patent infringement actions is a last resort. But the patent "death-squad" reputation of PTAB means infringers are emboldened to continue their infringement because they know their chance in an IPR to extinguish all claims of a challenged patent exceeds 70%—a risk to their patent assets that universities are loath to take.

Third, the inherent inconsistencies between district courts' patent validity standards and PTAB practice harms university patents. A district court provides protections to university patents such as the presumption of validity,

requirement to prove invalidity by clear and convincing evidence, and well-developed claim construction case law. The PTAB has no such presumption of validity, requires only a preponderance of the evidence for the defendant to show that challenged claim that the PTO previously stated was patentable is not, and is not bound by this Court's or the Federal Circuit's precedents in determining claim construction.

Fourth, the evident corruption of the IPR procedure casts a pall on that whole administrative process. Indeed, it was only four days before Oil States filed its Brief on the Merits that the PTO's practice of stacking the PTAB became publicly known in the intellectual property community when a patent attorney excerpted an oral argument before the Federal Circuit. During that argument, the PTO admitted that its director (at the time, Michelle Lee) has expanded IPR panels from the standard three-member size on "many many" occasions and that the director does so because "the Director knows how they're going to rule." Bill Vobach, *Selection process for assigning judges to expanded PTAB panels*, (August 20, 2017) *available at* http://www.717madisonplace.com/?p=9143 (quoting Oral Argument at 48:00-06, *Yissum Research Dev. Co. of the Hebrew Univ. of Jerusalem v. Sony Corp.*, 626 F. App'x 1006 (Fed. Cir. 2015) (Nos. 2015-1342, 2015-1343)).

Considering the unique place of the American university in developing scientific knowledge throughout the history of this Nation, the Court should grant the relief Oil States seeks.

ARGUMENT

A. The Role Research Universities Play in Advancing Scientific Knowledge.

Research universities are the United States' incubators of invention and innovation. Jacob H. Rooksby, *Innovation and Litigation: Tensions Between Universities and Patents and How to Fix Them*, 15 YALE J. OF LAW AND TECH., 312, 355 (2013). Transformative advancements including the laser,[7] magnetic-resonance imaging,[8] GPS systems,[9] the blue-light LED,[10] Google's search algorithm,[11] anti-aging technology,[12] and more,[13] all originated on

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7. Robert Sanders, "Nobel Laureate and laser inventor Charles Townes dies at 99," *UC-Berkeley News Center*, January 27, 2015, *available at* http://news.berkeley.edu/2015/01/27/nobel-laureate-and-laser-inventor-charles-townes-dies-at-99/.

8. *MRI's Inside Story*, The Economist, December 4, 2003, available at http://www.economist.com/node/2246166; *see also* Cole at 262-265.

9. Mark Shwartz, *GPS Pioneer Bradford Parkinson Awarded Draper Prize In Engineering*, Stanford Report, February 19, 2003; *GPS Inventor Inducted Into Hall Of Fame*, Stanford Report, February 18, 2004.

10. Tim Stoddard, *Blue Light Technology Remains BU's Intellectual Property*, B.U. Bridge (Dec. 13, 2002), *available at* https://www.bu.edu/bridge/archive/2002/12-13/bluelight.htm.

11. Shwartz, *supra* n. 14.

12. David Kroll, *The Influential Patent That's Driving Anti-Aging Research*, Reuters, Sept. 15, 2015, *available at* http://www.reuters.com/article/idUSL1N11L02J20150915.

13. *See* Association of Univ. Tech. Managers, *40 Innovations Worth Celebrating*, *available at* http://www.autm.net/autm-info/

college campuses. *See generally,* Jonathan R. Cole, *The Great American University: Its Rise to Preeminence, Its Indispensable National Role; Why it Must be Protected,"* (New York: Public Affairs, 2009) at 257-259 (hereafter "Cole at [page]"). In fact, "our nation's primary source of both new knowledge and graduates with advanced skills continues to be its research universities." Committee on Research Universities, *Research Universities and the Future of America,* (Washington, D.C.: The National Academies Press, 2012), 1. Universities produce discovery after discovery to expand knowledge for a society whose growth is linked to the knowledge economy. Cole at 4; Committee on Research Universities, at 3, n. 13.

American universities "have long had a more practical orientation than universities in the United Kingdom or Germany," which emphasize theory and philosophy. Walter W. Powell & Jason Owen-Smith, *Universities and the Market for Intellectual Property in the Life Sciences,* 17 J. POL'Y ANALYSIS & MGMT. 253, 254 (1998). For more than 150 years, since at least the Morrill Act,[14] American research universities have sought to solve problems and create industrial solutions. Joshua E. Powers, *Commercializing Academic Research: Resource Effects on Performance of University Technology Transfer,* 74 J. HIGHER EDUC. 26, 45 (2003) ("[T]he economic development role for America's research universities had historically centered on the land-grant institutions."); *see generally* Peter Lee, *Patents and the University,* 63 DUKE L. J. 1, 9-10 (2013).

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about-tech-transfer/about-technology-transfer/public-benefits / autm-40th-anniversary/.

14. 7 U.S.C. § 301, *et seq.*

B. Universities are the "Keepers of the National Scientific Flame."

After World War II, universities became the foundation of a new "national system of innovation." Cole at 92, 98. In July 1945, responding to a November 17, 1944 letter from President Roosevelt, Vannevar Bush[15] outlined this new system in his report, *Science: The Endless Frontier*, the "policy blueprint" that "shaped U.S. science policy after the Allied victory." Cole at 91-92; *see also ibid.* at 100 ("*Science—The Endless Frontier* produced a broad, ambitious vision for American science after the war."). Bush noted that "[b]asic scientific research is scientific capital" and identified the need to "strengthen the centers of basic research which are principally the colleges, universities, and research institutes." Dr. Vannevar Bush, *Science: The Endless Frontier, A Report to the President*, July 1945.[16] The new system placed special emphasis on universities and independent research institutes because "[i]t is only the colleges, universities, and a few research institutes that devote most of their research efforts to expanding the frontiers of knowledge." *Ibid.* The system also proposed a partnership whereby the federal government would provide support for basic science to

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15. Vannevar Bush was "a major public figure [instrumental in mobilizing talented individuals for the war effort], vice-president and dean of engineering at the Massachusetts Institute of Technology from 1932-1938, and later president of the Carnegie Institution, he convinced President Roosevelt to form the National Defense Research Committee to coordinate scientific research for national defense." Cole at 86.

16. *Available at* http://www.nsf.gov/about/history/vbush1945.htm#summary.

research universities and linked that partnership to the goal of stimulating the economy. "The Bayh-Dole Act at 25," *BayhDole25, Inc.*, April 17, 2006, 8.

Based on this "blueprint," the U.S. established a system designed to "transform both the transmission and the production of knowledge in America" in which "scientific research [w]ould be carried out principally at the nation's universities," and "universities would also become incubators for developing talent in the young people who would make up the skilled workforce and scientific leadership of the next generation." Cole at 96. America's universities took on a new role as "keepers of the national scientific flame" and became "the driving force for a whole suite of economic and social objectives." Consortium for Science, *Science the Endless Frontier: Learning from the Past, Designing for the Future*, POL'Y & OUTCOMES, Dec. 9, 1994, at 6, 16.

Adopting this new system was a "momentous decision that decanted the mechanism and the resources for supporting science into the institutions responsible for training the next generation of scientists." *Ibid.* Recent studies highlight the significance of the U.S.'s decision: "Studies of federal funding for basic research in the past, particularly studies of research conducted at academic institutions, have estimated that the average returns from that spending exceed the returns that might have been gained had those resources been put to other uses." Congress of the United States – Congressional Budget Office, *Federal Support for Research and Development*, June 2007, vii.[17]

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17. *See also* Jonathan Rothwell, *et al.*, *Patenting Prosperity: Invention and Economic Performance in the United States and its*

The system succeeded. Basic research performed in engineering, electronics, early computers, and material sciences in the 1950s and 1960s, "over time produced an explosion of new technologies that have transformed our world, including such items as personal computers, mobile phones, and GPS systems." Rebecca M. Blank, *What Drives American Competitiveness?* 663 ANNALS AM. ACAD. POL. & SOC. SCI. 8, 21 (2016). The majority of that basic research occurs at universities.

C. The Bayh-Dole Act: The U.S. Government Backs Universities.

To incentivize innovation, Dr. Bush said that "grantees must be allowed to hold intellectual property rights on discoveries they made with federal funds, and that the federal government [must] be given only royalty-free licenses for their use." Cole, *supra*, at 97, 162. But the Federal Government did not implement Bush's vision until 35 years later, when it passed the Bayh-Dole Act in 1980. *Ibid.*

Between the conclusion of World War II and Congress' passage of Bayh-Dole, the government took the position that any inventions resulting from federally funded research belonged to the government; which would only license on a non-exclusive basis. Ashley J. Stevens, *The Enactment of Bayh-Dole*, J. OF TECH. TRANSFER, 29 at 94

Metropolitan Areas, Brookings Institution, 2013, 29, *available at* http://www.brookings.edu/~/media/research/files/reports/2013/02/patenting-prosperity-rothwell/patenting-prosperity-rothwell.pdf ("[T]he material well-being of all places now hinges on the continuous creation of new ideas, new technologies, and new products—and must be maximized. ... The evidence that federal R&D is worthy of public support is abundant."). Hereafter referred to as "Rothwell at [page]."

(2004). U.S. productivity and innovation became stifled and the United States lost its leadership position in both mature industries—automobile manufacturing, television production—and emerging industries such as memory chips and production of consumer electronics. *Id.* at 93. Billions of dollars of federal investment in cutting-edge research and invention remained on the shelf because the authority and incentives needed to justify the risk and expense of turning university research into new products was not available.

Bayh-Dole provided inventors and universities the authority and incentives they needed to commercialize the fruits of their research. Cole at 161. Through Bayh-Dole, Congress gave universities the power to license inventions resulting from federally sponsored research, which opened a potential new revenue stream for the universities that could be reinvested in further research. *Id.* at 165. The Bayh-Dole Act incentivized universities and industry "to transform university research into real products benefiting society at large," which accelerated knowledge transfer. *Id.* at 162-64, 170. On the 25th anniversary of the Bayh-Dole Act, Congress recognized:

> that federally-funded research at universities and Government laboratories and the partnerships between such nonprofit institutions and the private sector play a critical role in developing the technologies that allow the United States to lead the world in innovation.[18]

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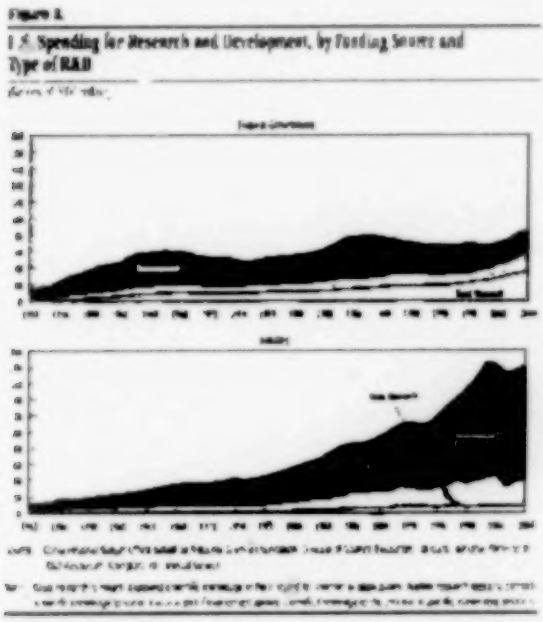
18. 152 Cong. Rec. H8814, § 201(a)(23) (2006) (Sense of Congress Relating to Bayh-Dole Act, finding 23); *see also Innovation's Golden Goose*, The Economist, December 12, 2002; Gene Quinn, *Exclusive*

Basic research is foundational. Whole industries have been created from the "cutting-edge discoveries" that "are most likely to occur" from basic research. *The Bayh-Dole Act: Important to our Past, Vital to our Future*, Association of Technology Managers, March 14, 2007. As of 2017, universities performed nearly 60% of all U.S. basic research. *Academia Continues as Nation's Basic Research Hub*, R&D 2017 Global R&D Funding Forecast (Winter 2017) at 12-13. That basic research means universities are "a resource for new scientific and engineering discoveries" and university research is the United States' "long-term investment in the future of [its] economy and society." *Id.* at 12.

By contrast, U.S. industry has discontinued long-range research and instead has focused on applied research, which builds upon the scientific discoveries made in basic research. *Ibid.*; *see* Rebecca M. Blank, *What Drives American Competitiveness?* 663 ANNALS AM. ACAD. POL. & SOC. SCI. 8, 21 (2016) (noting "[f]ew private sector entities want to invest in basic research since it may have little short-run return to their bottom line."). Thus, the National Science Board's most recent report stated that "[t]he nation's universities and colleges play a key role in U.S. R&D [research and development]" in large part because the universities perform "a large share of the nation's basic research." National Sci. Board, *Science & Engineering Indicators 2016* at 5-131.

Interview: Senator Birch Bayh on Bayh-Dole at 30, IPWatchdog.com (November 7, 2010), http://www.ipwatchdog.com/2010/11/07/exclusive-interview-senator-birch-bayh-on-bayh-dole/id=13198/.

In addition, universities do not just perform research on government-funded projects; instead, universities invest their own funds in research and are the second largest source of funding for university-performed research and development as shown in the table below.



Congress of the United States, *Congressional Budget Office*, "Federal Support for Research and Development," June 2007 at 8, Fig. 4.

Ultimately, through the Bayh-Dole Act, Congress acknowledged the special role that university research has in developing new technology and advancing scientific discovery, and how such university research will most efficiently be deployed in service of the common good.

The law allows universities the right to seek patents on federally funded research "'[t]o encourage the commercialization of new products.'" Joe Nocera, *The Patent Troll Smokescreen*, N.Y. TIMES, Oct. 23, 2015, *available at* https://www.nytimes.com/2015/10/24/opinion/the-patent-troll-smoke-screen.html?mcubz=0 (quoting Prof. Robin Feldman, director of the Institute for Innovation Law at the University of California Hastings College of the Law). That legislative intent to encourage innovation has been harmed by PTAB.

D. Universities Protect Their Research Through Patenting and Licensing.

To protect the intellectual property that results from university research, and to encourage and enable further research, universities rely on patents and licensing. By patenting and licensing inventions, universities generate revenue that is critical to financing additional research and development. In turn, this drives further innovation. *E.g.*, UCSD Patent Program, UCSD Policy and Procedure Manual, Contracts and Grants (Research) at 4. In fiscal year 2015, United States universities performed $66.5 billion in funded research, filed nearly 16,000 new patent applications, formed more than 1,000 new startups and had 5,057 startups formed from university research licensing that are still active. *See Highlights of AUTM's U.S. Licensing Activity Survey, FY2015*, at 8. University licensing is not new: the Wisconsin Alumni Research Foundation has invested in research and partnered with industry for more than 90 years. WARF.org, *Investing in Research, Making a Difference . . .*, *available at* http://www.warf.org/about-us/90th-anniversary/warf-s-first-90-years.cmsx.

University research produces valuable patents. According to the Brookings Institution, "federally financed patents are of higher quality than those funded by industry." Rothwell at 25. But universities rarely manufacture products. Instead, they partner with industry to license and commercialize their patented technology, or license their patents to start-up companies who implement a business plan to bring the patented inventions to market. *E.g.*, University of Iowa Operations Manual, § 30.2; University of Virginia Licensing & Ventures Group, *New Ventures*, *available at* http://lvg.virginia.edu/industry/ventures. In fiscal year 2015, such patents led to nearly 900 new products brought to market and $2.5 billion in licensing revenues from licensees. *Highlights of AUTM's U.S. Licensing Activity Survey, FY2015*, at 8. Among recent notable technologies licensed by universities are nicotine patches, DNA sequencers, cellphone camera image sensors, and the search engine algorithm that became Google. Larry Gordon, *How the UC System is Making Patents Pay Off*, L.A. TIMES, Oct. 10, 2015, *available at* http://www.latimes.com/local/education/la-me-uc-patents-20151011-story.html.

Licensing agreements allow universities to "act[] as magnets for the laboratories of private enterprises" and venture capitalists. Gary P. Pisano & Willy C. Shih, *Restoring American Competitiveness*, HARV. BUS. REV. (July 2009). These licenses have value to the companies that profit from university innovation, and to the national economy, which benefits from new jobs and economic activity. A recent PTO working paper noted that "patent grants have real effects for startups in the form of faster growth, more and higher-quality subsequent innovations, and an increased chance of eventually going public or

being acquired." Joan Farre-Mensa, Deepak Hegde, Alexander Ljungqvist, *The Bright Side of Patents*, Office of the Chief Economist, USPTO WORKING PAPER SERIES, Working Paper 2015-5 (Jan. 2016) at 18. And licensing from a university to a startup ***after*** the university obtains a patent allows the startup to avoid the review lag between patent application and patent grant. *Ibid.* at 21-22 (noting effects of patent review lag on sales growth and subsequent innovation).

Thus, joint university-industry projects advance scientific knowledge and innovation while providing a system for basic research. In doing so, the projects attract the next generation of scientists and encourage their work. The IPR procedure has hurt this process by devaluing patents and undermining the patent system.

E. University Patents and the Free Rider Problem.

University research has achieved its most far-reaching benefits when industry has held up its end of the bargain—partnering with universities and licensing viable patents then developing commercial products that practice the patented innovations. But industry actors who have chosen to be "willing free riders on the backs of university research efforts" and use inventions made by universities without authorization—and without paying royalties—have harmed innovation. *See* Cole at 171. This is because "universities and their patent licensing organizations depend on the ability to license to established or start-up companies to commercialize their inventions." May 19, 2009 Letter from Carl E. Gulbrandsen, Wisconsin Alumni Research Foundation to The Hon. Jon Leibowitz, Chairman, Fed. Trade Comm'n,

RE: Evolving IP Marketplace – Comment, Project No. P093900, 3, *available at* http://www.scribd.com/doc/113951875/1Warf. Growing fiscal pressures on state budgets and other university resources have resulted in reduced state funding to public universities, making the impact of free riders on universities particularly pernicious.

Commercialization of university patents is highly uncertain. Only about 20% of university inventions are successfully commercialized. Scott Andrew Shane, *Academic Entrepreneurship: University Spinoffs and Wealth Creation,"* (Northampton, MA: Edward Elgar Publishing Ltd., 2009), 32, 35. Universities therefore depend on their blockbuster technologies to generate substantial revenue that can then be reinvested into further research. Cole at 167.

When industry actors deliberately infringe instead of paying a reasonable royalty under a license, they not only deprive universities of an important source of revenue, but they also deprive the U.S. of resources that could be used to fund the next generation of research and innovation. This phenomenon is especially problematic when the infringer is a foreign company committing acts of infringement within the United States, thereby profiting from university research for years while concurrently depriving the university of funds that could lead to additional innovation. *Compare Carnegie-Mellon Univ. v. Marvell Tech. Group*, 807 F.3d 1283, 1291 (Fed. Cir. 2015) (noting Marvell began infringement in 2001) *with* Don Clark, "Marvell to Pay $750 Million in Settlement with Carnegie Mellon," WALL ST. JOURNAL, Feb. 17, 2016 (noting settlement in 2016 after lawsuit had been commenced in 2009).

The universities' focus on basic research means the time lag between licensing and commercialization typically is relatively long. University inventions are licensed, on average, when university patents are four years old and commercialized when they are seven years old. Irene Abrams, Grace Leung, Ashley J. Stevens, *How are U.S. Technology Transfer Offices Tasked and Motivated—Is It All About the Money?* 17 RES, MGMT. REV. 35 (2009). Thus, even when a license agreement is signed, the university only obtains its first dollar after waiting many years.

Finally, universities are not in the business of litigation and generally see patent litigation as a last resort. For that reason, universities consider enforcement action as appropriate only when there is "[b]latant disregard on the part of the infringer for the university's legitimate rights in availing itself of patent protection..." *Ibid.* Suing a potential industry partner creates a web of reputational and fiscal risks for the university. Jacob H. Rooksby, *Innovation and Litigation: Tensions Between Universities and Patents and How to Fix Them*, 15 YALE J. OF LAW AND TECH., 312, 359, 365 (2013).

This natural reluctance of leading research universities to maintain lawsuits against patent infringers has its costs. It is not lost on copyists who are now largely free to loot the best research in the world without any adverse economic consequence. Instead, such copiers simply engage in "efficient infringing" that has minimal cost to the infringer, but harms the patentee. Joe Nocera, *The Patent Troll Smokescreen*, N.Y. TIMES, Oct. 23, 2015, *available at* https://www.nytimes.com/2015/10/24/opinion/the-patent-troll-smoke-screen.html?mcubz=0 (defining "efficient infringing" as "using a technology that infringes

on someone's patent, while ignoring the patent holder entirely."). That cost acutely affects research universities that actively disseminate information to the public about their discoveries as part of their educational and research missions, whereas "researchers at corporations almost never publish in scientific journals, mostly because valuable knowledge could immediately be adopted by competitors." Rothwell, *supra*, at 27. This imbalance makes it much easier for infringers to gain access to information they can use to infringe while simultaneously making it more difficult for universities to detect such infringement. Accordingly, research universities need the patent laws to deter deliberate infringement not excuse it.

F. *Inter Partes* Review and the Law of Unintended Consequences.

The Leahy-Smith America Invents Act of 2011 ("AIA") has reduced patent lawsuits in the United States courts because it created the IPR procedure. 35 U.S.C. § 311, *et seq.* IPRs concern patents that have been issued by the Patent and Trademark Office. But IPR proceedings lack the protections that Congress, this Court, the Federal Circuit, and the various district courts provide to Constitutional patent rights. Both a petition to institute an IPR trial, and the outcome of the IPR trial, are determined by the same three non-Article III administrative law judges of the Patent Trials and Appeals Board ("PTAB" or "the Board") whose continued employment is subject to the PTO's approval. Indeed, the PTO has admitted to loading IPR panels with administrative patent judges who the PTO expects will rule the way that the Director wants them to, instead of maintaining their independence from the agency. Bill Vobach, *Selection Process for Assigning*

Judges to Expanded PTAB Panels, 717 Madison Place Blog (Aug. 20, 2017), http://www.717madisonplace.com/?p=9143.

The differences between IPR and district court trials are crucial.

First, despite the Congressional mandate that, once granted, "[a] patent shall be presumed valid," 35 U.S.C. § 282(a), PTAB grants no presumption of validity to the challenged patent. Instead, in determining whether to institute an IPR trial, the Board looks only at whether "the petition supporting the ground [for IPR] would demonstrate that there is a reasonable likelihood that at least one of the claims challenged in the petition is unpatentable" even though such claim has already been found patentable and in a district court would be presumed valid. 37 C.F.R. § 42.108(c). The PTO's decision to deny presumption of validity in IPR trials actively thwarts the AIA's stated purpose of "restor[ing] the confidence in the presumption of validity that comes with issued patents"—H.R. REP. NO. 112-98, at 48—by increasing the likelihood that a patent, if challenged will be invalidated.

Second, the district courts must apply the *Phillips* test and interpret patent claims according to their customary and ordinary meaning. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-1313 (Fed. Cir. 2005) (en banc). Even though IPR occurs after the challenged patent has been granted, PTAB applies the "broadest reasonable construction in light of the specification"—a standard that applies to patent ***applications***—to the challenged claims. 37 C.F.R. § 42.100(b); *see In re Yamamoto*, 740 F.2d 1569, 1571 (Fed. Cir. 1984) (giving claims their broadest reasonable interpretation during patent prosecution "serves the

public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified").

Third, in district court the accused infringer must prove all its invalidity defenses by clear and convincing evidence; in IPR, the petitioner merely has to prove by a preponderance of the evidence that a claim that the PTO once found patentable no longer is. *Compare Microsoft Corp. v. i4i Ltd. P'ship*, 131 S.Ct. 2238, 2242 (2011) *with* 35 U.S.C. § 316(e).

Fourth, upon a proper jury demand under Federal Rule of Civil Procedure 38, the district court will empanel a jury to render a verdict on factual issues of patent infringement. *See Markman v. Westview instruments, Inc.*, 517 U.S. 370, 376 (1996). The role of juries in determining patent infringement cases dates to the mid-1700s, at least, when English courts empaneled juries to determine patent disputes. *Newsham* v. *Grey*, C33/376, f. 336 (Ch. 1740). Thus, patent infringement disputes, and the invalidity defenses invariably raised by defendants, have been tried by Article III courts and determined by juries for centuries, including when Congress passed the Judiciary Act of 1789, 1 Stat. 73.

The Oil States Brief on the Merits demonstrates why IPRs effectively withdraw patent validity suits from Article III courts. Pet. Br. at 20-27. That withdrawal is unconstitutional for the various reasons Petitioner discusses. *Ibid.* at 19-50. The nature of IPR proceedings shows why Congress's endeavor to "fix" flaws in patent law has only created additional uncertainty. IPRs enable incumbent technology companies to force universities and the university-incubated startups to face expensive

IPR proceedings and the high likelihood of losing their patents if they do not offer licenses on terms favorable to the incumbent.

Although ostensibly designed to correct improper grants of bad patents, the IPR process has acted as a tool to undermine the entire patent system and make efficient infringement even more lucrative for infringers. Now, nine months after the PTO has granted a patent, any person or entity, for any reason, can seek to eradicate any patent it does not own if the petitioner has sufficient funding to pursue the IPR. 35 U.S.C. § 311(c)(1); *see* Michelle Carniaux and Michael Sander, *PTAB Crashers: a Who's Who of Non-Practicing IPR Petitioners*, Inter Partes Review Blog, *available at* http://interpartesreviewblog.com/ptab-crashers-a-whos-who-of-non-practicing-ipr-petitioners/; *see* 37 C.F.R. 42.101(a)-(c) (exceptions to IPR petitioner eligibility). The IPR petitioner does not have to challenge all patent claims, it can pick the claims it seeks to eradicate, which would usually be the patent's most valuable claims. *See* 35 U.S.C. § 311(b).

To date, based on a search of the patent litigation research site docketnavigator.com, no university has petitioned for an IPR to challenge the validity of any extant patent. But more than 80 petitions for IPR have been filed against universities. Those petitions have cost the defending universities significant funds that would otherwise have been earmarked for licensing and commercialization. Through March 31, 2017, the PTAB has continued to live up to its "patent death squad"[19]

19. Rob Stern & Gene Quinn, *PTAB Death Squads: Are All Commercially Viable Patents Invalid?* IPWatchdog.com (March 24,

reputation: in 65% of trials that culminated in a final written decision, ***all*** challenged patent claims have been canceled. United States Patent and Trademark Office, *Patent Trial and Appeal Board Statistics 3/31/2017* at 10 ("PTAB Statistics"). Considering the 65% chance that IPR will be instituted if sought,[20] the 65% rate for canceling all claims at trial, and the additional 16% of trials in which the patentee loses at least some claims that the petitioner chose to challenge, the price of infringement to the infringer is cheap.

Ultimately, in IPRs, trials are heard by the same administrative patent judges who decided to grant the petition for IPR and all such judges are appointees of the Secretary of Commerce. 35 U.S.C. § 6. The PTO's admissions that it has stacked IPR panels against patent owners, which admissions have become broadly known by the public only within the past few weeks, calls into question the integrity of the IPR process.

Thus, universities have lost much of the value of their patents, and have been less able to obtain partnership with industry to bring the product of university research to the public in a manner that benefits the university and the industrial partner, not just the free rider. *See* Gene Quinn, "Post Grant Patent Challenges Concern Universities,

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2014), http://www.ipwatchdog.com/2014/03/24/ptab-death-squads-are-all-commercially-viable-patents-invalid/id=48642/ (quoting former Federal Circuit Chief Judge Randall Rader's description of PTAB).

20. *See* PTAB Statistics at 10 (2406 trials instituted and 1317 petitions denied means in 2406 of 3723 cases that reached a decision on whether to institute IPR, PTAB decided to institute IPR).

Pharma," IPWatchdog.com, April 1, 2015 (summarizing analysis of AIA by Carl Gulbrandsen, former Managing Director at the Wisconsin Alumni Research Foundation). The harm to universities and basic research in the United States will only accumulate with more IPR filings.

To protect private property rights and effectuate full protection of patent rights in the United States, the Court should grant the relief sought by Oil States.

CONCLUSION

The AIA has had an adverse effect upon university technology transfer operations primarily due to the lack of protections that PTAB provides to patents that the PTO has previously granted. These issues impact university research, innovation, and technology. The Brief of Petitioner demonstrates how IPRs violate the Constitution. The Court should reverse the court of appeals' judgment.

Respectfully submitted,

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